ABSTRACT OF THE DISCLOSURE

The present invention contemplates water-bearing silicate materials for fire protection which are essentially dry when cured. The dryness property is achieved by modifying the basic method of essentially reacting water glass with calcium chloride in such a way as to bind the free water into solid form without adversely affecting the basic chemical and physical structure of the original product. The invention further contemplates the incorporation of these materials into one or more fire protection container configurations such as a multilayered structure in which the insulation forms the outermost wall of the container, an intermediate layer comprising a light weight porous, thermal insulator such as urethane foam, and an innermost layer comprising a phase change material with a melting point of around 70 degrees F to 125 degrees F, depending on the heat bearing characteristics of the objects to be protected. The basic method of drying the insulation material is by physically wicking the excess water from the cured parent material through use of a cellulose sponge material. Two other methods are also disclosed to bind the free water in the insulation material. The first of these includes the addition of an anhydrous salt to the slurry to form a crystalline hydrate. Dibasic sodium phosphate (Na_2HPO_4) works effectively for this purpose. The second method includes the addition of calcium oxide or calcium hydroxide to the slurry. This converts soluble and/or colloidal silica (SiO_2) present in the mixture to calcium silicate ($CaSiO_3$), thereby resulting in a material microstructure which provides more effective physical retention of the water.